

REMARKS

Claims 1-20 are pending in the application. Favorable reconsideration in light of the remarks that follow is respectfully requested.

Information Disclosure Statement

The Examiner states the information disclosure statement filed on 11/26/2003 fails to fully comply with 37 CFR 1.98(a)(2). A complete copy of the article cited from Volume 5, No. 2 of the Journal of Education in Science for Trinidad and Tobago is requested by the Examiner. However, the Journal does not contain any article, only the cover page (as included with the IDS) is pertinent for examination. Since the Journal does not contain an article, one is not provided.

The Anticipation Rejection

Claims 1-3 and 5-8 have been rejected under 35 U.S.C. § 102 as being anticipated by U.S Patent No. 4,199,876 to Katz. Katz relates to a periodic table with four coaxially mounted cylinders or spheres.

In order for an anticipation rejection to be proper, one document must disclose each and every element of the claim. Claim 1 recites the following elements: 1) the elements represented by objects in a continuous unidirectional periodic spiral with a substantially elliptical shape; 2) each Period of objects in a single spiral loop with each successive Period having a larger circumference than the preceding Period; and 3) the objects arranged so that elements in the same chemical group are in substantially the same vertical plane.

Katz fails to disclose several elements of the claimed invention. First, Katz does not disclose the elements arranged in a continuous unidirectional spiral. The recitation of "continuous unidirectional spiral" requires that each object representing an element is immediately preceded and immediately followed by an object representing the element of one lower or one higher atomic number, respectively (except for the objects representing the highest and lowest atomic number). The models apparently disclosed

in Katz show discontinuity in the atomic number of neighboring objects representing elements. For example, Fig. 4 appears to show elements 81 and 86, 71 and 80, and 57 and 80 immediately following/preceding each other.

In addition, the periodic model shown in Fig. 3-11 of Katz appears to be composed of four discontinuous cylinders (col. 4, ln. 27) each with objects/indicia on an upper section and a lower section of each cylinder "creating a series of eight sections" (col. 4, ln. 28-34). These "series of eight sections" have a total of 20 enclosed, circular arrangements of objects/indicia wherein the highest and lowest atomic number in each enclosed, circular arrangement neighbor one another; the highest and lowest atomic number in most of the circular arrangements are separated by more than one atomic number. The model represented in Figs. 4-10 of Katz appears to show a total of 19 points of discontinuity in the model where an object/indicia representing an element is not immediately preceded/followed by the element of one lower/one higher atomic number. The points of discontinuity are as follows: elements 2 and 3, 4 and 6, 10 and 11, 18 and 19, 20 and 21, 30 and 31, 36 and 37, 38 and 39, 48 and 49, 54 and 55, 56 and 57, 70 and 71, 80 and 81, 86 and 87, 88 and 89, 102 and 103, 112 and 133, and 118 and 119. These 20 enclosed circular arrangements cannot be considered to be a continuous unidirectional spiral due to the points of discontinuity shown in the Figures of Katz.

Furthermore, the "Sphere Model" disclosed in Katz appears to be composed of four discontinuous (i.e. enclosed, see Fig. 17) spheres, which also have points of discontinuity as a result of the surfaces of the spheres being non-intersecting. Element 1 of claim 1 also requires the objects/element to be arranged in a substantially elliptical shape while the models disclosed by Katz are either perfectly cylindrical/circular (Figs. 3-10) or spherical (Figs. 13-18). Therefore, Katz does not disclose Element 1 recited in Claim 1.

Second, Katz does not disclose each Period of objects is in a single spiral loop with each successive Period having a larger circumference than the preceding Period. Note that the term "Period" is capitalized through the application including the claims.

"Period" means the seven Periods as defined by the IUPAC that contain all known elements as shown by traditional Periodic Tables (see application Figs. 1 and 2). Katz appears to show a total of eight periods that are not equivalent to the Periods defined by the IUPAC (see col 2, ln. 68-col 3, ln. 1). For example, periods 2 and 3 of Katz combined are equivalent to IUPAC Period 2, a total of 8 elements. In addition, each of the eight periods shown in Katz is not of larger circumference than the preceding period. Periods 1 and 2, 3 and 4, 5 and 6, and 7 and 8 shown by Katz are the same circumference (Figs. 4 and 5, 6 and 7, 8 and 9, and 10 and 11 are of the same diameter and each Figure represents one of the eight periods of Katz; col. 8, ln. 3-20). Since Katz does not disclose that each Period of objects in a single spiral loop with each successive Period having a larger circumference than the preceding Period as recited in Claim 1, Katz cannot anticipate the claims for this additional reason.

Third, Katz does not disclose the objects/elements arranged so that objects/elements in the same chemical group are in substantially the same vertical plane. For example, Fig. 3 of Katz shows elements N, C, B, Cr, V, Ti, Sc, Pm, Nd, Pr, Ce, and La in the same vertical plane as element H. As discussed in the abstract of Katz, the 18 IUPAC chemical groups are defined as the last valence electron having the same predicted  $l$ ,  $m_l$ , and  $m_s$  quantum numbers (same is true for the 14 separate chemical groups formed by the lanthanides, elements 58-71, and actinides, elements 90-103). Or as an equivalent definition of a chemical group, elements have the same predicted number of valence electrons with the same  $l$  quantum number.

The method of determining the predicted quantum numbers utilizing the Katz model is shown in Fig. 12 and discussed col. 8, ln. 27 through col. 10, ln. 16. Briefly, quantum numbers are determined using a separate "quantum-number-finder aid" in conjunction with the periodic table model (col. 8, ln. 27-31). Similarly, the sphere model disclosed by Katz requires determining quantum numbers by observing which "lateral segment" the element occupies on the surface of the sphere (col. 14, ln. 19-31). However, while Katz discusses determining if the last valence electron is an s, d, or f electron (the  $l$  quantum number), there is no discussion of the value of the  $m_l$  quantum

number nor how many valence electrons are predicted to have the same / quantum number (col. 14, ln. 19-31). In either scenario, determination of predicted quantum number/chemical group is not determined and cannot be determined by observing which elements are arranged in the same vertical plane. Therefore, Katz does not disclose element 3 recited in claim 1.

Since Katz does not disclose each and every limitation of claim 1, claim 1 is not anticipated by Katz. Further, claims 2-3 and 5-8 depend from claim 1 and incorporate all the features of claim 1, therefore, claims 2-3 and 5-8 are also not anticipated by Katz. Therefore, it is respectfully requested the rejection of claims 1-3 and 5-8 under 35 U.S.C. § 102(b) be withdrawn.

#### First Obviousness Rejection

Claims 4 and 9 are rejected under 35 U.S.C § 103 as obvious over U.S. Patent No. 4,199,876 to Katz in view of U.S. Patent No. 3,581,409 to Alexander. Claims 4 and 9 depend from independent claim 1. The Examiner asserts that all features of claim 1 incorporated into claims 4 and 9 are disclosed by Katz and that Alexander discloses the use of color codes to represent various properties. As discussed above under the Anticipation Rejection heading, Katz does not teach any of the features recited in claim 1. The Examiner has not provided an explanation of why a person of ordinary skill would be motivated to modify Katz to arrive at the claimed invention. Any teachings regarding color coding that may or may not be present in Alexander do not cure the defect of the failure of Katz to teach the following: 1) the objects/elements represented by objects in a continuous unidirectional periodic spiral with a substantially elliptical shape; 2) each Period of objects/elements in a single spiral loop with each successive Period having a larger circumference than the preceding Period; and 3) the objects/elements arranged so that elements in the same chemical group are in substantially the same vertical plane. As such, Katz and Alexander do not teach or suggest each and every feature of claim 1 incorporated into claims 4 and 9. Therefore,

it is respectfully requested that the rejection of claims 4 and 9 under 35 U.S.C. § 103 be withdrawn.

#### Second Obviousness Rejection

Claim 10 is rejected under 35 U.S.C § 103 as obvious over U.S. Patent No. 4,199,876 to Katz. Claim 10 recites the following elements: 1) the objects/elements represented by objects in a continuous unidirectional periodic spiral with a substantially elliptical shape; 2) each Period of objects/elements in a single spiral loop with each successive Period having a larger circumference than the preceding Period; 3) the objects arranged so that objects/elements in the same chemical group are in substantially the same vertical plane; and 4) a carrying case to carry the three dimensional arrangement.

The Examiner asserts that Katz teaches elements 1, 2, and 3 recited above and takes official notice that providing a carrying case for educational purposes is well-known. Elements 1, 2, and 3 are substantially the same as the elements of claim 1 discussed under the heading "Anticipation Rejection." As discussed, Katz does not teach any of the elements 1, 2 and 3. The Examiner has not provided an explanation of why a person of ordinary skill would be motivated to modify Katz to arrive at the claimed invention. Any existence or non-existence of any knowledge regarding the use of carrying cases does not cure the defect of Katz of not teaching Elements 1, 2, and 3 of claim 10 as recited above. The Applicant does not agree nor concede to the existence of any knowledge regarding the use of carrying cases. Katz and the official notice asserted by the Examiner do not teach or suggest every feature of claim 10. Therefore, it is respectfully requested that the rejection of claim 10 under 35 U.S.C. § 103 be withdrawn.

#### Third Obviousness Rejection

Claims 11-20 are rejected under 35 U.S.C § 103(a) as obvious over U.S. Patent No. 4,199,876 to Katz in view of Interactive Periodic Table. Claims 11-18 depend from independent claim 10 and incorporate all the features of Claim 10. Claim 10 recites the following elements: 1) the objects/elements represented by objects in a continuous unidirectional periodic spiral with a substantially elliptical shape; 2) each Period of objects/elements in a single spiral loop with each successive Period having a larger circumference than the preceding Period; 3) the objects/elements arranged so that elements in the same chemical group are in substantially the same vertical plane; and 4) a carrying case to carry the three dimensional arrangement. Elements 1, 2, and 3 are substantially the same as the limitations of claim 1 discussed under the heading "Anticipation Rejection." As discussed, Katz does not teach any of the limitations of elements 1, 2 and 3. The Examiner has not provided an explanation of why a person of ordinary skill would be motivated to modify Katz to arrive at the claimed invention. Any teachings that may or may not be disclosed by Interactive Periodic Table regarding providing audio information, illumination, and/or color coding do not cure the failure of Katz to teach Elements 1, 2, and 3 of claim 10. The applicant does not agree nor concede that Interactive Periodic Table teaches any information relevant to the Application. Therefore, Katz and Interactive Periodic Table by do not teach or suggest every feature of claim 10 and, therefore, do not teach each and every feature of claims 11-18.

Claim 19 recites substantially the same elements 1 through 4 as claim 10 except that the arrangement of objects/elements is computer implemented. Elements 1, 2, and 3 are substantially the same as the features of claim 1 discussed under the heading "Anticipation Rejection." As discussed, Katz does not teach or suggest any of the features of elements 1, 2 and 3. The Examiner has not provided an explanation of why a person of ordinary skill would be motivated to modify Katz to arrive at the claimed invention. Any teachings that may or may not be disclosed by Interactive Periodic Table regarding providing audio information, illumination, and/or color coding do not cure the failure of Katz to teach Elements 1, 2, and 3 of claim 19. The applicant does

not agree nor concede that Interactive Periodic Table teaches any information relevant to the Application. Therefore, Katz and Interactive Periodic Table by do not teach or suggest every element of claim 19. Likewise, Katz and Interactive Periodic Table do not teach or suggest every element of claim 20, which depends from claim 19.

Therefore, it is respectfully requested that the rejection of claims 11-20 under 35 U.S.C. § 103 be withdrawn.

Petition for Extension of Time

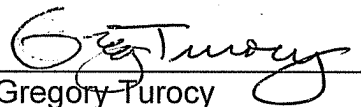
A one month petition for extension of time is hereby made. Small entity status has been established. Payment is being made through the EFS electronic filing system.

Should the Examiner believe that a telephone interview would be helpful to expedite favorable prosecution, the Examiner is invited to contact Applicants' undersigned attorney at the telephone number listed below.

In the event any fees are due in connection with the filing of this document, the Commissioner is authorized to charge those fees to our Deposit Account No. 50-1063.

Respectfully submitted,

**AMIN, TUROCY & CALVIN, LLP**



Gregory Turocy  
Reg. No. 36,952

24<sup>th</sup> Floor  
1900 East 9<sup>th</sup> Street  
Cleveland, Ohio 44114  
(216) 696-8730  
Fax (216) 696-8731